

AMENDMENTS TO THE DRAWINGS

Please amend Figure 1 to include the label 164 associated with the diode that is connected to the node formed by inductor 162 and switch 181.

Please amend Figure 5 to correct the connection of inductor 283 to the solid circuit line between transistors 161 and 181.

Please amend Figure 5 to include the label 182 for the diode that is connected between capacitor 20 and switch 281.

The drawing amendments are described in the application as originally filed and discussed below. No new matter has been added.

REMARKS / ARGUMENTS

Status of Claims

Claims 1-35 are pending in the application and stand rejected. Applicant has amended Claims 1, 5, and 10-14, 16-33, and has added new Claims 36-37, leaving Claims 1-37 for consideration upon entry of the present Amendment.

Applicant respectfully submits that the rejections under 35 U.S.C. §112, second paragraph, 35 U.S.C. §102(b), and 35 U.S.C. §103(a) have been traversed, that no new matter has been entered, and that the application is in condition for allowance.

Drawings

The Examiner remarks that Figure 1 fails to label the diode that is connected to the node formed by inductor 162 and switch 181 as described in the specification.

Applicant has amended Figure 1 to include reference numeral 164, which relates to the subject diode. No new matter has been added, as antecedent support may be found in the original specification at Paragraph [0015].

The Examiner remarks that inductor 283 is shown in Figure 2 (understood to be Figure 5) connected to the dashed box that indicates switching aid circuit 28.

Applicant has amended Figure 5 to indicate that inductor 283 is connected between transistor 161 and transistor 181 at one end, and between diode 282 and diode 283 at the other end. No new matter has been added, as antecedent support may be found in the original specification at Paragraph [0040].

Figure 5 has been further amended to include reference numeral 182 to label the diode that is connected between capacitor 20 and switch 281. No new matter has been added as antecedent support may be found in the original specification at Paragraph [0018] and at Figure 1.

A drawing replacement sheet is provided herewith.

In view of the foregoing, Applicant submits that the drawings comply with 37 CFR 1.83(a), and therefore respectfully requests reconsideration and withdrawal of this objection, which Applicant considers to be traversed.

Specification

The Examiner remarks that the title of the invention is not descriptive, and that a new title that is clearly indicative of the invention to which the claims are directed is required. The Examiner suggests a replacement title. Applicant thanks the Examiner for the suggestion. However, in view of the following remarks, Applicant provides herewith a different substitute title.

The title should be brief but technically accurate and descriptive. Where the title is not descriptive of the invention claimed, a new title should be provided that is clearly *indicative of the invention to which the claims are directed*. MPEP § 606 (emphasis added).

While Applicant believes that the original title is descriptive of *the invention to which the claims are directed*, Applicant has nonetheless provided a substitute title in an effort to further this application to allowance.

Independent Claim 1 is directed to “A buck/boost converter...”.

Accordingly, the invention is directed to “a buck/boost converter”. As such, Applicant submits that the phrase “A Buck/Boost Converter” is indicative of the invention to which the claims are directed.

Since “A Buck/Boost Converter” is technically accurate and descriptive of the invention to which the claims are directed, Applicant submits that the original title meets the requirements of MPEP §606.

However, in an effort to further this application to allowance, Applicant provides herewith the substitute title of “A Buck/Boost Power Converter”, which is even more descriptive of the invention to which the claims are directed as it now relates the invention to a “power converter” as opposed to just a “converter”.

In view of the foregoing amendment and remarks, Applicant respectfully submits that the Title as amended is sufficiently descriptive of the invention to which the claims are directed and therefore complies with MPEP §606. Accordingly, Applicant respectfully requests the Examiner's acceptance of this amended title.

Rejections Under 35 U.S.C. §112, Second Paragraph

Claims 5, 9, 13, 14, 19, 20, 25, 26, 31 and 32 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicant regards as the invention. The Examiner remarks that Claims 5, 9, 13, 14, 19, 20, 25, 26, 31 and 32 contain the same error as they all depend on Claim 5.

Claims 28-33 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner remarks that Claims 28-33 do not give a clear indication of which transistor is conducting, and which is non-conducting.

Applicant traverses these rejections for the following reasons.

Regarding Claims 5, 9, 13, 14, 19, 20, 25, 26, 31 and 32

Applicant has amended Claim 5 to now recite, inter alia:

"The converter according to *claim 1* wherein...",

which eliminates the redundancy of Claim 5 being dependent upon itself. In view of dependent Claims 9, 13, 14, 19, 20, 26, 31, and 32, being dependent upon Claim 5, Applicant submits that the amendment to Claim 5 therefore corrects for the indefiniteness of Claims 9, 13, 14, 19, 20, 26, 31, and 32. Accordingly, Applicant respectfully requests the Examiner to reconsider and withdraw this rejection under 35 U.S.C. §112, second paragraph, which Applicant considers to be traversed.

Regarding Claims 28-33

Applicant has amended Claims 10 through 14 to each recite, inter alia:

"...wherein the selector comprises *a first transistor and a second transistor*."

Applicant has amended Claims 28 through 33 to be dependent from Claims 10-15, and to each recite, inter alia:

“...wherein in the inductive-storage chopper configuration, the first transistor is conducting and the second transistor is non-conducting.”

No new subject matter has been introduced, as antecedent support may be found in the specification as originally filed at Paragraph [0018] “*...selector comprises for example transistors 181, 182*”, and in Figure 1, depicting a first transistor, indicated by reference numeral 181, and a second transistor, indicated by reference numeral 182.

In view of the above amendments and remarks, Applicant respectfully submits that the claimed subject matter is now described in such a manner that gives a clear indication of which transistor is conducting and which is non-conducting, and therefore particularly points out and distinctly claims the subject matter which applicant regards as the invention. Accordingly, Applicant respectfully requests the Examiner to reconsider and withdraw this rejection under 35 U.S.C. §112, second paragraph, which Applicant considers to be traversed.

Rejections Under 35 U.S.C. §102(b)

Claims 1-4, 6-8, 10-12, 14-18, 21-24, 27, and 34 stand rejected under 35 U.S.C. §102(b) as being anticipated by Midya (U.S. Patent No. 6,348,781, hereinafter Midya).

Applicant traverses this rejection for the following reasons.

Applicant respectfully submits that “[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, *in a single prior art reference.*” *Verdegaal Bros. V. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987) (emphasis added). Moreover, “[t]he identical invention must be shown in as complete detail as is contained in the *** claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Furthermore, the single source must disclose all of the claimed elements “arranged as in the claim.” *Structural Rubber Prods. Co. v. Park Rubber Co.*, 749 F.2d 707, 716, 223 U.S.P.Q. 1264, 1271 (Fed. Cir. 1984). Missing elements may not be

supplied by the knowledge of one skilled in the art or the disclosure of another reference. *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 780, 227 U.S.P.Q. 773, 777 (Fed. Cir. 1985).

Regarding Claim 1:

Applicant has amended Claim 1 to recite, inter alia:

“...wherein *the cell is capable of using a single one of the switch in the at least two configurations.*”

No new matter has been added by this amendment, as antecedent support may be found in the specification as originally filed, such as at Paragraphs [0013] and [0015] for example.

Dependent claims inherit all of the limitations of the respective parent claim.

Examiner finds Midya to disclose that “[Fig 1 *switches 30 and 34* are used in both modes, either opened or closed]” (Paper 1, page 4).

However, in comparing Midya with the claimed invention, Applicant submits that Midya is absent disclosure of the claimed “...wherein *the cell is capable of using a single one of the switch in the at least two configurations.*”

Accordingly, Applicant submits that Midya does not disclose each and every claim element arranged as in the claim, and, absent anticipatory disclosure in Midya of each and every element of the claimed invention arranged as in the claim, Midya cannot be anticipatory.

Regarding Claims 16-21 More Specifically

Applicant has amended Claims 16 through 21 to now recite, inter alia:

“...*the transistors are both continuously conducting.*”

No new matter has been added by these amendments as antecedent support may be found in the specification as originally filed, such as at Paragraph [0026] for example.

Dependent claims inherit all of the limitations of the respective parent claim.

The Examiner alleges Midya to disclose “[...switch 30 conducts continuously while switch 34 conducts *alternately according to a duty cycle*.]” (Paper 1, page 5).

Applicant respectfully points out that Claims 16 through 21 depend from Claims 10 through 15, respectively. Claims 10 through 15 are directed to the “*...selector comprises two transistors*”, and Claims 16 through 21 further define “*... in the parallel chopper configuration, the transistors are both continuously conducting.*”

It appears to Applicant that in rejecting Claims 16 through 21, the Examiner has associated the selector of Midya “[Fig. 1 buck/boost control circuit 26]” (Paper 1, page 4) with the switching cell of Midya “[switches 30, 34, diodes 40, 46 and inductor 38]” (Paper 1, page 4). The Examiner alleges “[col. 3, lines 21-27 switch 30 conducts continuously while switch 34 conducts alternately according to a duty cycle]” (Paper 1, page 5).

In comparing Midya with the instant invention, Applicant finds Midya to disclose “Whenever the output voltage is required to be greater than the input voltage Vin, switching signal Sw2 with duty cycle D2 >0 is applied to Boost switch 34 to produce a Boosted output voltage V2. Whenever signal Sw2 is switching to produce Boosted voltage output the Buck switch 30 remains in the closed position...”(Midya, col 3, lines 21-27), but to be absent the claimed “*...transistors are both continuously conducting*”.

Accordingly, Applicant submits that Midya does not disclose each and every element of the claimed invention arranged as in the claim, and absent anticipatory disclosure in Midya of each and every element of the claimed invention arranged as in the claim, Midya cannot be anticipatory.

Regarding Claims 22 – 27 More Specifically

Applicant has amended Claims 22 through 27 to now recite, inter alia:

“*...the transistors are both continuously non-conducting.*”

No new matter has been added by these amendments as antecedent support may be found in the specification as originally filed, such as at Paragraph [0031] for example.

Dependent claims inherit all of the limitations of the respective parent claim.

Applicant respectfully points out that Claims 22 through 27 depend from Claims 10 through 15, respectively. Claims 10 through 15 are directed to the “*...selector*

comprises two transistors”, while Claims 22 through 27 further define: “*... in the series chopper configuration, the transistors are both continuously non-conducting.*”

It appears to Applicant that in rejecting Claims 22 through 27, the Examiner has associated the selector of Midya “[Fig. 1 buck/boost control circuit 26]” (Paper 1, page 4) with the switching cell of Midya “[switches 30, 34, diodes 40, 46 and inductor 38]” (Paper 1, page 4). The Examiner alleges “[col. 3, lines 29-32 switch 34 is non-conducting continuously while switch 30 is non-conducting alternately according to a duty cycle]” (Paper 1, page 5).

In comparing Midya with the instant invention, Applicant finds Midya to disclose “In a similar manner, if output voltage V2 is required to be less than Vin, Buck switch signal Sw1 is switched with a duty cycle of D1 while Boost switch 34 remains in the open position...”(Midya, col. 3, lines 29-32), but to be absent “*... the transistors are both continuously non-conducting.*”

Accordingly, Applicant respectfully submits that Midya does not disclose each and every element of the claimed invention arranged as in the claim, and absent anticipatory disclosure in Midya of each and every element of the claimed invention arranged as in the claim, Midya cannot be anticipatory.

In view of the amendment and foregoing remarks, Applicant respectfully submits that the Examiner’s rejections under 35 U.S.C. §102(b) have been traversed, and requests that the Examiner reconsider and withdraw of this rejection.

Rejections Under 35 U.S.C. §103(a)

Claim 35 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Midya in view of Usui (U.S. Publication No. 2002/0011825, hereinafter Usui).

Applicant traverses this rejection for the following reasons.

If a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. MPEP §2143.01 citing *In re Gordon*, 733 F.2d 900.

The Examiner acknowledges that Midya is deficient in disclosing a diode bridge at the input, and looks to Usui to cure the deficiency. The Examiner remarks that "...a diode bridge at the input of a dc-dc converter effectively results in an ac-dc converter. Usui discloses a diode bridge at the input of an ac-dc converter [Fig. 1 full bridge rectifier 3]" (Paper 1, page 6).

In comparing the combination of Midya and Usui with the instant invention, Applicant finds Midya to disclose a dc-dc converter, "...especially suitable for cellular telephones, selective call two way radios and other battery powered devices." (Midya, col. 1 lines 7-9), and submits that incorporation of a diode bridge, as taught by Usui and suggested by the Examiner, would render the dc-dc converter disclosed by Midya unsatisfactory for its intended purpose (a dc-dc converter modified to have a diode bridge to provide an ac-dc converter would no longer serve the purpose of a dc-dc converter).

Accordingly, Applicant submits that Usui is absent any teaching, suggestion, or motivation to modify Midya for the purpose of arriving at the claimed invention while maintaining Midya to be satisfactory for its intended purpose. As such, Applicant submits that the combination of Midya and Usui does not establish a *prima facie* case of obviousness.

In view of the foregoing, Applicant submits that the References fail to teach or suggest each and every element of the claimed invention and are therefore wholly inadequate in their teaching of the claimed invention as a whole, fail to motivate one skilled in the art to do what the patent Applicant has done as such a combination would render the prior art being modified unsatisfactory for its intended purpose, and therefore cannot properly be used to establish a *prima facie* case of obviousness. Accordingly, Applicant respectfully requests reconsideration and withdrawal of all rejections under 35 U.S.C. §103(a), which Applicant considers to be traversed.

In light of the forgoing, Applicant respectfully submits that the Examiner's rejections under 35 U.S.C. §112, second paragraph, 35 U.S.C. §102(b), and 35 U.S.C.

§103(a), have been traversed, and respectfully requests that the Examiner reconsider and withdraw these rejections.

In addition to the foregoing, Applicant has amended Claims 16 through 33 to correct typographical errors, and provide proper antecedent support for dependent claims.

Regarding New Claim 36-37

Applicant has added new Claims 36-37, which depend either directly or indirectly from Claim 1, to now claim disclosed but previously unclaimed subject matter. No new matter has been added as antecedent support may be found in the application as originally filed, such as at Paragraph [0013] and [0015], Figure 1, and the originally filed claims, for example.

In view of the remarks set forth above regarding the allowability of Claim 1, Applicant submits that new Claims 36-37 are directed to allowable subject matter and respectfully requests entry and notice of allowance thereof.

The Commissioner is hereby authorized to charge any additional fees that may be required for this amendment, or credit any overpayment, to Deposit Account No. 50-2513.

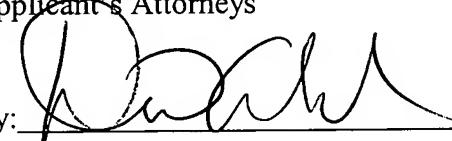
In the event that an extension of time is required, or may be required in addition to that requested in a petition for extension of time, the Commissioner is requested to grant a petition for that extension of time that is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to the above-identified Deposit Account.

Respectfully submitted,

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